

CLAIMS

1. A sealing material comprising a coating film comprising at least one kind of a metal or a metallic compound selected from the group consisting of metals, metal oxides, metal nitrides, metal carbides and complex thereof on the whole or a part of the surface of a substrate comprising a soft material having the shore D hardness of at most 75 and the shore A hardness of 40 to 100.
2. The sealing material of Claim 1, wherein the soft material is an elastomer.
3. The sealing material of Claim 1, wherein the soft material is a fluorine polymer material.
4. The sealing material of Claim 1, 2 or 3, wherein the soft material is a fluorine rubber.
5. The sealing material of Claim 1, 2, 3 or 4, wherein the thickness of the coating film is 0.005 to 1 μm .
6. The sealing material of Claim 1, 2, 3, 4 or 5, wherein the soft material and the coating film are closely adhered with each other at the degree of adhesivity where the number of peeling between the soft material and the coating film is at most 50/100, which is measured by the cross-cut tape adhesion test (1 mm square/100 pieces) according to JIS K5600.

7. The sealing material of Claim 1, 2, 3, 4 or 5, wherein the soft material and the coating film are closely adhered with each other at the degree of adhesivity where the critical breaking load is at least 25 mN, which is measured with the microscratch test at the following
5 conditions:

Note:

Test conditions:

Curvature radius of diamond stylus ... 5.0 μm

Elastic arm ... 146.64 g/mm

10 Stage angle ... 3.0°

Measurement speed ... 10.0 $\mu\text{m/s}$

Load applying speed ... 75.31 mN/mm

Excitation width ... 79 μm

Excitation frequency ... 30 Hz

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8. The sealing material of Claim 1, 2, 3, 4, 5, 6 or 7, wherein all the rates of decrease in weight are at most 1 % by weight at irradiating respective plasmas of O₂, CF₄, and NF₃ under the following conditions:

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Note:

Samples: A sheet having a thickness of 2 mm and a size of 10 mm × 35 mm

Irradiation conditions:

O₂ plasma and CF₄ plasma

Gas flow rate ... 16 SCCM

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Pressure ... 20 mTorr

Output power ... 800 W

Irradiation time ... 30 minutes

NF₃ plasma

NF₃/Ar ... 1 SLM/1 SLM

Pressure ... 3 Torr

Irradiation time ... 2 hours

Temperature ... 150°C

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9. The sealing material of Claim 1, 2, 3, 4, 5, 6, 7 or 8, wherein the coating film is formed by a vacuum film forming process.

10 10. The sealing material of Claim 9, wherein the vacuum film forming process is an ion plating process.

11. The sealing material of Claim 1, 2, 3, 4, 5, 6, 7, 8, 9 or 10, which is used for equipment for manufacturing a liquid crystal or a semiconductor.

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12. A liquid crystal or semiconductor manufacturing equipment which has the sealing material of Claim 1, 2, 3, 4, 5, 6, 7, 8, 9, 10 or 11.

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13. A process for preparing a sealing material comprising a step of coating the whole or a part of the surface of a substrate comprising of a soft material having the shore D hardness of at most 75 and the shore A hardness of 40 to 100 with at least one kind of a metal or a metallic compound selected from the group consisting of
25 metals, metal oxides, metal nitrides, metal carbides and complexes thereof by ion plating process.